

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-18 (Withdrawn)

19. (Currently Amended) An apparatus for simultaneously measuring voltage and current in a primary high voltage conductor, the apparatus comprising:

a current transformer comprising a secondary winding and a transformer core, the current transformer being electro-magnetically coupled to a high voltage conductor;

a capacitive voltage divider comprising a first capacitance between the high voltage conductor and the secondary winding of the current transformer and a second capacitance between the secondary winding of the current transformer and the transformer core;

a voltage measurement circuit connected to the current transformer, the voltage measurement circuit being configured to measure voltage in the primary high voltage conductor;
and

a current measurement circuit connected to the current transformer, the current measurement circuit being configured to measure current in the primary high voltage conductor.

20. (Original) The simultaneous voltage and current measuring apparatus of claim 19 wherein the first capacitance consists of a parasitic capacitance between the high voltage conductor and the secondary winding and the second capacitance consists of a parasitic capacitance between the secondary winding and the transformer core.

21. (Original) The simultaneous voltage and current measuring apparatus of claim 20 wherein the transformer core is connected to a reference potential.

22. (Original) The simultaneous voltage and current measuring apparatus of claim 21 wherein the reference potential is ground.

23. (Original) The simultaneous voltage and current measuring apparatus of claim 20 wherein the second capacitance has a value from approximately 0.001 microfarads to approximately 10 microfarads.

24. (Currently Amended) ~~The simultaneous voltage and current measuring apparatus of claim 21~~ An apparatus for simultaneously measuring voltage and current in a primary high voltage conductor, the apparatus comprising:

a current transformer comprising a secondary winding and a transformer core, the current transformer being electro-magnetically coupled to a high voltage conductor;

a capacitive voltage divider comprising a first capacitance between the high voltage conductor and the secondary winding of the current transformer and a second capacitance between the secondary winding of the current transformer and the transformer core, wherein:

the first capacitance consists of a parasitic capacitance between the high voltage conductor and the secondary winding and the second capacitance consists of a parasitic capacitance between the secondary winding and the transformer core,

the transformer core is connected to a reference potential, and

wherein the second capacitance forms a high pass filter network in combination with a drain resistor connected between the current transformer secondary winding and the reference potential;

a voltage measurement circuit connected to the current transformer, the voltage measurement circuit being configured to measure voltage in the primary high voltage conductor; and

_____ a current measurement circuit connected to the current transformer, the current measurement circuit being configured to measure current in the primary high voltage conductor.

25. (Currently Amended) The simultaneous voltage and current measuring apparatus of claim 24 wherein a cutoff frequency of the filter is set between ~~approximately~~ 1 hertz and ~~approximately~~ 0.001 hertz.

26. (Withdrawn)

27. (Currently Amended) The simultaneous voltage and current measuring apparatus of claim 19 wherein the current measurement circuit comprises:

an operational amplifier including a first input terminal connected to the current transformer and a second input terminal connected through a capacitor to the ground; and

a burden resistor connected between the first input terminal and the second input terminal of the operational amplifier.

28. (Currently Amended) The simultaneous voltage and current measuring apparatus of claim 27 further comprising a surge protection device connected between a terminal of the current transformer and ground.

29. (Currently Amended) ~~The simultaneous voltage and current measuring apparatus of claim 19~~ An apparatus for simultaneously measuring voltage and current in a primary high voltage conductor, the apparatus comprising:

_____ a current transformer comprising a secondary winding and a transformer core, the current transformer being electro-magnetically coupled to a high voltage conductor;

_____ a capacitive voltage divider comprising a first capacitance between the high voltage conductor and the secondary winding of the current transformer and a second capacitance between the secondary winding of the current transformer and the transformer core;

a voltage measurement circuit connected to the current transformer, the voltage measurement circuit being configured to measure voltage in the primary high voltage conductor,
wherein the voltage measurement circuit comprises:

an operational amplifier including a first input terminal, a second terminal connected to ground, and an output terminal;

a drain resistor connected between the first input terminal of the operational amplifier and the second input terminal of the operational amplifier;

a first resistor connected between the first input terminal of the operational amplifier and a first terminal of the current transformer; and

a second resistor connected between the first input terminal of the operational amplifier and a second terminal of the current transformer; and

a current measurement circuit connected to the current transformer, the current measurement circuit being configured to measure current in the primary high voltage conductor.

30. (Currently Amended) The simultaneous voltage and current measuring apparatus of claim 29 further comprising a surge protection device connected between a terminal of the current transformer and ground.

31. (Original) The simultaneous voltage and current measuring apparatus of claim 19 wherein the first capacitance comprises a parasitic capacitance between the high voltage conductor and the secondary winding and the second capacitance comprises a parasitic capacitance between the secondary winding and the transformer core.

32-51. (Withdrawn)

52. (Original) An apparatus for simultaneously measuring voltage and current in a primary high voltage conductor, the apparatus comprising:

a current transformer comprising a secondary winding and a transformer core, the current transformer being electro-magnetically coupled to a high voltage conductor;

a capacitive voltage divider comprising a first capacitance between the high voltage conductor and the secondary winding of the current transformer and a second capacitance between the secondary winding of the current transformer and the transformer core;

means for measuring voltage in the primary high voltage conductor using the current transformer; and

means for measuring current in the primary high voltage conductor using the current transformer.

53. (Original) The simultaneous voltage and current measuring apparatus of claim 52 wherein the first capacitance consists of a parasitic capacitance between the high voltage conductor and the secondary winding and the second capacitance consists of a parasitic capacitance between the secondary winding and the transformer core.

54. (Original) The simultaneous voltage and current measuring apparatus of claim 52 wherein the first capacitance comprises a parasitic capacitance between the high voltage conductor and the secondary winding and the second capacitance comprises a parasitic capacitance between the secondary winding and the transformer core.

55-60. (Withdrawn)